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tremity of those branches so distant, that Melons will grow; but they cannot be good, because they are so far from the place, which affords them their nourishment; and their Juice is alter'd by the length of its passage through the branches, which the Sun spoileth; whereas the foot of the Melon being short and well truss'd, there are always leaves covering the branches and even the Melons themselves, until they be near ripe.

Too great heat parches them too much to take nourishment well; and this you must take care of. He that is curious, must every day walk often in his Melon-garden, to cut off all the branches, which he shall observe to be useles, or hurtful. You'll find of them to shoot forth almost to the Eye, and they are capable to alter all, if it be not remedied in time.

I must not forget to tell you, that from the midst betwixt the two Ears and the two first Leaves there shoots out yet one branch more, which ought to be kept, if vigorous, but cut, if weak.

In the *Figure* I have mark'd a Leaf with 5, shooting out from the midst of the fourth knot: I might have mark'd more, coming forth successively from one another, as you see the fourth come from the third, &c.

We may perhaps the next Moneth impart to the Reader another Letter from the same Generous and Intelligent person, upon the same Subject.

An Account of two Books.

I. *Renati Franc. Slusii MESOLABUM.*

S E U

Dua medie Proportionales inter extremas datas per Circulum & per Infinitas Hyperbolas vel Ellipses, & per quamlibet exhibitæ. Ac Problematum omnium Solidorum effectio per easdem Curvas. Accessit pars altera de Analyfi, & Miscellanea. Leodii Eburonum 1668. in thin 4º.

THe *Argument* the Title declares to be the same with that in the Geometry of the famous *Des-Cartes*; viz. That Ancient Probleme of finding two Means, or Doubling the Cube,

which troubled all *Greece*. The Solution of which Probleme in Geometry may be compared to that with the giving of the *Cube-root* of any Number proposed in *Arithmetick* : For, in *Arithmetick*, the first of two continual Proportionals between an *Unit* and any Number proposed, is the *Cube-root* of that Number, and the Unit in *Arithmetick* is represented by a Line in Geometry, which is one of the Extrems.

Concerning this Probleme, the *Author* declares himself to be none of those, that search for that which cannot be found, to wit, to perform it by *Right Lines* and a *Circle*. 'Tis true indeed, it may be so done, to wit, by tryals and profers ; as, who cannot in that manner divide an Arch into three Equal parts ? But such *Mechanisms* are accounted *ageometrick* ; and such operations may be well resembled to the vulgar Rule of *False Position* in *Arithmetick*, which cannot give an absolute true Resolution of one of the meanest of Questions, when the thing sought is *Multiplex* of it self, or Involved ; for instance, what Number is that, which multiplyed in it self makes 9 ; who knoweth it not to be 3 ? But who can find it to be absolutely so by the aid of the ordinary rules of *False Position*, wherein the Extraction of a *Square Root* is not prescribed ?

The *Author* observes, that amongst those, that solve this Probleme by the *Conick Sections*, they seem to have afforded fewer Effectiōns thereof, than there have been Ages, since it was first proposed. Very few by ayd of a *Circle* and an *Hyperbola* or *Parabola* : by a *Circle* and *Ellipsis* none, that he could observe to have been published.

The which the *Author* considering, and studying how to supply, he found out not onely one, but infinite such Effectiōns, and that not in one Method, but many ; following the guidance of which Methods, by the like felicity he hath constructed all solid Problems infinite ways, by a *Circle* and an *Ellipsis* or *Hyperbola*.

1. His general Methods for finding two Means, by a *Circle* and either an *Hyperbola* or *Ellipsis*, are laid down in Prop. 1, 2, 16, and in this 16 Prop. he sheweth to do it with any *Ellipsis* and a *Circle*.

2. Particular Effectiōns for finding but one or both of the Means,

Means, and Doubling the Cube, in Prop. 3. to 6.

3. And albeit all *Cubick Equations* may be solved, either by the finding of *two Means*, or the *Trisection of an Angle*, yet he shews the Extent of his Method, in finding out other Infinite ways for the doing thereof, from Prop. 7. to 12.

4. The *Trisection of an Angle* by a *Circle* and *Hyperbola*, Prop. 13. and by a *Parabola* in stead thereof, Prop. 15. And the finding of *two Means* by a *Circle* and *Parabola*, Prop. 14.

In the Second part of his Book *De Analysis*, the Author first gives you the *Analysis* or *Algebra*, whereby all his *General Methods* of finding *two Means* were invented. And afterwards, for the advancement of Geometry, gives you the *Analysis*, that relates to his *particular Methods*, as in case you would find but one of those Means, and afterwards by an easie operation the other. After that, he comes to shew, how the *Effections* or *Delineations* for *Cubick Equations* were invented; And then, how those *Constructions* for the *Trisection of an Angle* were found out: the use whereof is, to give Lines in a known measure, equal to the quantity's sought, whereby either to give aid in the easie obtaining the first and second figures of the root, or controul the same.

Lastly, he comes to treat of *General Constructions* for the resolving of all *solid Problems*, without reduction of the *Æquations* proposed; and sheweth a *general Construction* for all *Cubick* and *Bi-quadratick* *Æquations* by ayd of a *Circle* and a *Parabola*, letting *Ordinates* fall from the points of Intersection on some Diameter of the *Parabola* (which is always parallel to the *Axis*,) whereas *Des Chartes* letting those *Ordinates* always fall upon the *Axis*, was forced to prepare and alter the *Æquations* by driving out or taking away the second term (which is next the highest,) that the sum of the *Negative* roots might be equal to the sum of the *Affirmative* ones, as his *Constructions* always require.

But how to find out all the variety's of solving all *Solid Problems* by the *Conick Sections*, hear the *Author* to the *Reader*: *Methodum non adscripsi, tum quod gratius ac utilius futurum arbitratus sum, si eam ipse privato Studio, ex hisce Speciminibus eliceret, tum etiam quod judicium tuum de tota re præstolarer, Decrevi enim,*
si

si favor tuus accedat, non ipsam methodum tantum, sed & alia, quæ simul observavi, brevi, Deo bene juvante, censura tua submittere.

We come next to speak of the last part of the Book, to wit, his *Miscellanea*, and because it falls in here somewhat properly, we therefore first mention his fourth Chap. *De Maximis & Minimis*, from which he derives this Proposition;

If any Magnitude (or Number, as the whole) be divided into such parts, that are to each other as a Number to a Number, the Product of those powers of the parts, that are of the same degree, as the parts themselves denominate, is the greatest of all Products of the like powers of the parts of the same magnitude when otherwise divided.

Concerning the Proposition the Author saith thus; *Liceret hujus Propositionis Usum prolixius extendere ad determinandas nempe maximas & minimas applicatarum in Curvis, tangentes, & similia; verum cum hanc materiam nuper in Exercitatione sua Geometrica feliciter aggressus sit Vir Clarissimus Michael Angelus Riccius, doctrina & humanitate singulari, orbi literato notissimus, & justî operis spem faciat; frustra nunc pluribus insisterem, cum meliora & perfectiora ab ipso propediem expectari debeant.*

That exercitation of *Riccio* hath been lately re-printed for *Moses Pitts*, Book-feller in *Little-Britain*, (and is annexed to *Mercator's Logarithmotechnia*) wherein the Author *Riccio* promisseth a new Rank of *Conical Solids*, which cut, do exhibit those *Infinite Parabola's and Ellipses*, whereby all *Æquations* may be easily resolved and determined. But the Learned and Modest *Slusius* in a private Letter concerning these matters, and *Riccio's* before-mention'd *Geometrical Exercitation*, saith somewhat more. *Diu est etiam ex quo eandem materiam aggressus fueram, qua Methodo, videbis in Miscellaneorum meorum Cap. 4. ubi Propositionem universalem demonstravi, ex qua omnia deduci possunt; non tamen deduxi, ne viro amico, qui hanc materiam jam occuparat, & a quo multa ac præclara expectari possunt, occasionem bene merendi de Rep. literaria præiperem.*

Concerning the rest of the *Miscellanics*; Our Author in the 1. Chapt. treats *De Infinitis Spiralibus, & spatiorum. ab iis & Radio*

Radio Circuli comprehensum, mensura. Concerning which he tells you, that *Archimedes* squared that *Spiral*, which was made by an equal motion both in the *Radius* and *Circumference* of the Circle: that *Stephano Angeli* hath done the like, when the Motion in the *Radius* is equal, but in the *Circumference* according to any degree of Acceleration; which gave him occasion to render this Doctrine easie and Universal by reducing it to one *Analysis*, when the motion is accelerate according to any degree either in the *Radius* or *Circumference*; and hence resolves this Probleme; *In Circulo describere Spiralem ex talibus motibus compositum, ut Circulus ad spatium Spirale habeat rationem datam numeri ad numerum.* And applies the same Doctrine in

Chap. 3. to another sort of *Infinite Spirals*.

Chap. 2. He treats *De mensura spatiorum, curva & recta Contentorum, & eorum Centri Equilibræ*; applying the former *Analysis* or *Algebraick* Calculation thereto.

Chap. 5. Treats *De Puncto flexus contrarii in Conchoide Nicomedis prima*: which Point he determines by the Interfection of a *Parabola*, whose *Axis* is situated in the same Line with that of the *Conchoid*; or by a *Cubick Parabola*, whose *Axis* is parallel to the *Base* of the *Conchoid*, and *Vertex* the same with the *Pole* of the *Conchoid*; and hence invents innumerable other *Conchoids* of like properties, and finds the Curve, passing through those points of flexure, that are made by *Infinite Conchoids*, described about the same common *Pole* and *Base*, which in the *Common Conchoids* he finds to be the *Perimeter* of the *Cubick Parabola* here mentioned: But in his own *new Conchoids*, it is the antient *Cissoïd*; extended beyond a Quadrant and running *Asymptotick*: And he finds also the round Solids made by the Rotation of these infinite Curves; and of the *Cissoïd* Line, about their *Base* Lines or *Asymptotes* equal to finite Solids.

Chap. 6. The Author considering; that *Vincenzo Viviani* in his Book *De Maximis & Minimis* found, that if there were innumerable *Parabola's* described, having the same *Axis* and *Vertex* common, if from any point in that *Axis*, the shortest Lines were drawn to those *Parabola's*, all those points of Incidence would fall in an *Ellipsis*; and the Authors *Analysis* taught him, that the *Prop.* was Universal, wheresoever the point be assigned, from
which

which the least lines are to be drawn ; which he hath extended, and applied to those infinite sorts of other *Parabola's*.

Chap. 7. Treats *De Figurarum dimensione ex dato Centro Equilibrui*: This he saith is accurately handled by the Learned already ; *Aliquot tamen modos adscribit, ut non difficiles, ita nec inutiles ad investiganda Equilibrui Centra*: which may be applied to good use ; for, in any Curve, if there be *Ordinates* enough given, standing erect at an equal parallel distance, you may approach the *Area*, and if by ayd thereof, you find the Center of Gravity, then do you obtain the measure either of the *Round Solid*, or *Spindle* made by the Rotation of the given Figure, or of *Hoofes* raised upon it as a Base.

Chap. 8. The Author sheweth an easie way of finding the Center of Gravity of an *Hyperbolical Conoid*, and that in order to the resolution of this Probleme ; *Locum invenire, ad quem sunt omnia Centra Conoidum Hyperbolicarum, quæ sunt ab Hyperbolis in dato Cono recto sectis, & quarum Axes sint Axis ejusdem Coni paralleli* ; which he finds to be an *Hyperbole*.

Chap. 9. He treats of the *Center of Gravity* of the *Lunula* of *Hippocrates Chius*, and sheweth, that if *Hippocrates* had given that, as he did the *Quadrature* of the *Lunula*, he had squared the *Circle*.

Chap. 10. Treats of Arithmetical Problems, wherein he asserts, that *Diophantus* was wont to solve *Arithmetical Questions* with great subtilty, but useth numbers only, whereas the same may often be more easily and universally solv'd by *Algebra* ; and takes for examples, the third Question of the Fourth Book, which he reformes, and reduceth divers of the like kind, that *Bachet* hath added, to one Proposition and Resolution ; the 44th of the Fourth Book of the same *Diophantus*, which being solved with much trouble, he sheweth to have a briefe *Analysis* ; the 13th of the third Book, and the 36th of the fourth Book, by reason of the likeness of it's Operation with the former.

Thus we have given an account of the Author's Book. What Repure he hath among the Learned, needs not to be insisted on. The famous *Paschal* or *Dettonville* in a Letter to this Author, saith, (to give it in *English*;) I believe, that to make it known that 'tis *TON*, who hath found (for Example) this *Parabola*, which is the

the Place, that gives the Dimensions of the Surfaces of the Solids of the Cycloid about the *Base*, it must be I, that must tell the World so; as well as the other Wonders of your *New Analysis*, and so many other things, which you have done me the honor to impart unto me, with that goodness you are pleas'd to have for me, &c.

The Book here commended is the Second Edition of the *Mesolabe* of this Excellent Geometer, our Author; Concerning whose first Edition thus saith *Stephano Angeli* pag. 217. *Accessionis ad Stercometrium & Mechanicen. Quomodo autem hujusmodi Problemata Solida construantur, edoctum fuit a quam plurimis; sed Herculeas metas in infinitum transcendit Nobilissimus & Clarissimus Geometra Renatus Franciscus Slusius Leodiensis, in suo admirabili Mesolabo, in quo hæc infinitis enucleat modis.*

Concerning *this* Book, we find it to be the judgement here, (and doubtless it will have the same esteem elsewhere among the Learned) that in it there is the most excellent Advancement made in this kind of *Geometry*, since the famous Mathematician and Philosopher *Des Cartes*.

II. *Traëtatus de CORDE; item de motu & Colore SANGVINIS, &c.*

A. Richardo Lower, M. D. Londini in 8o, impensis Jacobi Allestry, 1669.

THE Learned Author of this Treatise (a Member of the *R. Society*) considering with himself, how important it was, for the attaining a full knowledge of the Nature and Qualities of the *Blood*, to investigate, besides the *Circular Motion* thereof, the *Origin* and *Celerity* of that Motion, and the various *Changes* thereof, together with the *Causes* of them; as also, to make an estimate of the Quantity of that Liquor emitted at every Pulsation; thought it very well worth while, to give, from his own best Observations, a clear and particular account of that whole matter. And for as much as he conceives, that the *Motion* of the *Blood* depends on that of the *Heart*, he begins with a Discourse concerning the *Situation* and *Structure* of the *Heart*, to

shew, How exactly these two are calculated for its Motion, and how well adapted to distribute the Blood into the parts of the whole Body.

In the *First Chapter* then, he considers the *Diversity* of the *Situation* of the Heart in *different Animals*, and the Reason thereof; proceeding to discourse of the *Pericardium* and its Use, together with the Origin and Use of the *Serum* therein; and why in *Man* only that *Case* of the Heart grows to the Midriff, and what makes it to do so; as also, why the *Cone* in an *Humane* Heart bends much more to the Left side, than in *Brutes*: Then shewing, that *Arteries* have their rise from the Heart, but *Veins* terminate in it, and how and by what Vessels the Heart is nourish'd by the *Alimentary Juice*: treating also of the *Vessels* of the Heart, its *Nerves*, and the various *Influx* of the *Animal Spirits* through the *Nerves* into the Heart, according to the various shapes of *Animals*, together with the Cause thereof: Proving further, that the substance of the Heart is perfectly *Muscular*, and in perfection surpassing all other Muscles of the Body (where he expatiates into un-common Observations concerning *Muscles* in general;) then descending to a Minute Explication of the parts of the Heart, and there particularly shewing the *Mechanical Contrivance* of the Heart for its *Systole* and *Diastole*, together with an accurate description of the *Foramen Ovale*, and its Use in the *Fœtus*, and the Clausure of the same in *Animals* born.

In the *Second Chapter* he treats of the *Motion* and *Office* of the Heart; Where, as he admits not of any *Ferment* or *Ebullition* of the Blood in the Heart (which he affirms would be an Obstacle to its *Systole*, as 'tis needless to the *Diastole*,) so he assents, that the Motion of the Heart depends not from such an *Ebullition* (which he proves by Experiments, and vindicates from Objections;) but that the genuine and immediate Instruments of the Heart's Motion are its *Fibres*, *Nerves*, and *Spirits* flowing through them, the action of the Heart being altogether conform to that of other Muscles: Where he takes occasion to make it out, that the Motion of Muscles is not caus'd by their being *inflated*, nor by any *Explefion* of the *Spirits* passing through them, but after the manner, as two men taking one another by their hands draw themselves

selves close together into mutual embraces: Whence he goes on to shew That the whole Motion of the Heart consists indeed in the *Systole*, that of the *Diastole* being onely a *Motion of Restitution*. Further, that there is a necessary Commerce betwixt the *Heart* and *Brain* (the Cause of all Sense and Motion:) but that both ultimately depend from the *Stomack*, as the constant *Purveyor* and Furnisher of Matter for Blood and Spirits.

In the *Third Chapt.* he teacheth, with what *Celerity* all the Blood passeth through the Heart, and what *difference* there is between the *Venal* Blood and the *Arterial*. As to the *former*, he calculateth, that all the Blood passeth through the Body, thirteen times, (not *Six*, as 'tis misprinted in the Book it self) in *one hour*. And concerning the *latter*, he is of opinion, that the *Purpureous* and florid color of the Blood in the *Arteries* proceeds not from its *Accension* in the Heart (if there be any such thing) but depends altogether from the *Lungs*, and the *Admixture* of the *Air* with the *Blood* there: which he proveth by considerable Experiments; refuting withal the opinion of those that will derive it from the *Comminution* of the Blood in the *Lungs*.

In the *Fourth Chapt.* he gives an Accompt of the Rise, Progress and Use of the Invention of *Transfusing* Blood out of one Animal into another: though in the History of this particular he commits (I know not by what over-sight) a mistake, in relating, that *Monsieur Denys* (call'd by him *Dionysius*) arrogateth to himself that Invention, whereas he onely tells us that some of his Nation do so. Besides which, we must needs take notice of another mistake in this part of the Book, *viz.* that the Author taking occasion to speak of the *Philos. Transactions*, calls them the Transactions of the *Society*; which certainly he would not have done, if he had either but taken notice of what is said in *Numb. 11.* of the same; or else consider'd, that so Illustrious and so Learn'd a Body would certainly, if they thought fit to publish any thing as theirs, entertain the knowing World both with sublimer Matter, and with a futable Eloquence: But this *by the by*.

In the *Fifth Chapt.* he treats of the *Chyle*, and its Change into Blood; where he observeth, that nothing passeth from the *Spleen* through the *Vas breve* into the *stomack*; but that the *Ferment*

of the stomach proceeds immediately from the Blood it self: Explaining further, How the *Separation* of the *Chyle* is perform'd in the *Intestins*, and how the same, to facilitate the more its passage, is diluted and refined by the Iuyce of the *Pancreas*, secreted into the *Duodenum*: Rending also the Cause, Why all the *Glanduls* in the *Abdomen* and in all the lower parts of the Body do deposite their *Lympha* or Iuyce into the Common great *Receptacle* of the *Chyle*, and Why that Receptacle is plac'd between the *Tendons* of the *Daphragme*; as also, Why those Channels, which convey the *Chyle* into the *Subclavial Vein*, are double. To which he adds, That all the *Chyle* is by the *Ductus Thoracicus* alone transmitted into the Bloud and Heart, which he proveth by several considerable Experiments, with somereflexion on the *Bilsan* Experiment alledged for the contrary. All which he concludes by shewing the degrees and ways of Change, whereby the *Chyle* is at last converted into Bloud; and how it serveth for the *Nourishment* and the several parts of the Body.

The Whole receives a singular Elucidation and Ornament by the Accurate *Figures*, in 6 *Tables* annexed.

Many Curious and important Observations are occasionally interspersed; such as are: That the Capillary vessels (of the same sort) do open into one another in all the parts of the Body: That all the Muscles of the Body, are *Biventers* or double-belly'd: That as the Motion of the Heart and Bloud is Circular, so the Fibres, as the Moving *Engines* of them, are about the *Cone* of the Heart brought into a Circle and Center: That the Motion in the Muscles is not like *Shooting*, but *Fencing*, and many more, for which we must refer to the Book it self.

F I N I S.

L O N D O N,

Printed by T. N. for John Martyn, Printer to the Royal Society, and are to be sold at the Bell a little without Temple-Bar, 1668.